

In the Application of:

Coassin et al.

Application No.: 10/789,183

Filed: February 26, 2004

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PATENT

Attorney Docket No.: AURO1420-1

### **Amendments to the Claims**

Please amend claims 1 and 3 as indicated in the listing of claims.

Please cancel claims 2, and 19-71 without prejudice or disclaimer.

Please add new claims 72-85

The listing of claims will replace all prior versions, and listings of claims in the application:

### **Listing of Claims:**

1. (Currently amended) A reagent dispensing apparatus comprising:

a support frame; and

a dispensing module removably attached to the support frame, the dispensing module and comprising a self-contained pressurized fluid delivery subsystem;

wherein the fluid delivery subsystem comprises a plurality of reagent containers, each reagent container containing a liquid reagent, each reagent container being fluidly connected to a corresponding discrete fluid path terminating in a corresponding discrete dispensing tip, said dispensing tips being collectively arranged in a rectangular array of dispensing tips configured for dispensing into wells of an assay plate, each fluid path having a corresponding dispensing device, each dispensing device being adapted to selectively dispense a corresponding reagent through the corresponding dispensing tip into said wells in response to a corresponding actuation signal;

~~wherein the liquid reagents contained in each reagent container are subjected to permanent elevated pressure.~~

Claim 2. (Canceled)

3. (Currently amended) The apparatus of claim 1 2, wherein distances between centers of the dispensing tips are calculated to correspond to a timing algorithm associated with an assay plate having known dimensions.

4. (Original) The apparatus of claim 3, wherein the distance between the centers of adjacent dispensing tips is approximately 1.50 millimeters.

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5. (Original) The apparatus of claim 3, wherein the distance between the centers of adjacent dispensing tips is approximately 2.25 millimeters.

6. (Original) The apparatus of claim 3, wherein the distance between the centers of adjacent dispensing tips is approximately 4.50 millimeters.

7. (Original) The apparatus of claim 1, wherein the pressurized fluid delivery subsystem further comprises an air manifold with a port for receiving an air supply line from a source of pressurized air, and a plurality of air delivery lines extending from the air manifold, wherein each of the plurality of air delivery lines is connected to a corresponding one of the plurality of reagent containers.

8. (Original) The apparatus of claim 1, wherein each fluid path is less than approximately 25 centimeters in length.

9. (Original) The apparatus of claim 1, wherein each fluid path has a volume capacity of less than approximately 200 microliters.

10. (Original) The apparatus of claim 1, wherein each dispensing device comprises corresponding electrical leads for receiving the corresponding actuation signals.

11. (Original) The apparatus of claim 10, wherein the actuation signals are controlled by computer software.

12. (Original) The apparatus of claim 1, wherein each dispensing device comprises a corresponding solenoid.

13. (Original) The apparatus of claim 1, wherein the dispensing module is attached to the support frame using quick-release clamps.

14. (Original) The apparatus of claim 1, further comprising a motor drive system for controlling movement of an assay plate.

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15. (Original) The apparatus of claim 1, wherein the coefficient of variation of reagent concentration within wells of an assay plate after dispensing of reagents thereinto using the apparatus is less than approximately 2.6%.

16. (Original) The apparatus of claim 1, wherein the coefficient of variation of reagent concentration within wells of an assay plate after dispensing of reagents thereinto using the apparatus is less than approximately 5.0%.

17. (Original) The apparatus of claim 1, wherein the coefficient of variation of reagent concentration within wells of an assay plate after dispensing of reagents thereinto using the apparatus is less than approximately 10.0%.

18. (Original) The apparatus of claim 1, wherein the fluid paths each comprise a corresponding portion supported by a common dispensing head.

Claims 19-71. (Canceled)

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72. (New) A reagent dispensing apparatus for dispensing a reagent into wells of an assay plate, the apparatus comprising:

    a support frame;

    a motor drive system for controlling movement of the assay plate; and

    a dispensing module removably attached to the support frame using quick-release clamps, the dispensing module comprising a self-contained pressurized fluid delivery subsystem, the self-contained pressurized fluid delivery subsystem comprising:

        a plurality of reagent containers, each reagent container containing a liquid reagent;

        a plurality of dispensing tips collectively arranged in a rectangular array configured for dispensing into wells of the assay plate and the distances between centers of the dispensing tips being calculated to correspond to a timing algorithm associated with an assay plate having known dimensions, wherein each reagent container being fluidly connected to a corresponding discrete fluid path terminating in a corresponding discrete dispensing tip, each fluid path having a corresponding dispensing device, each dispensing device being adapted to selectively dispense a corresponding reagent through the corresponding dispensing tip into said wells in response to a corresponding actuation signal;

        an air manifold with a port for receiving an air supply line from a source of pressurized air; and

        a plurality of air delivery lines extending from the air manifold to a corresponding one of the plurality of reagent containers.

73. (New) The apparatus of claim 72, wherein the distance between the centers of adjacent dispensing tips is approximately 1.50 millimeters.

74. (New) The apparatus of claim 72, wherein the distance between the centers of adjacent dispensing tips is approximately 2.25 millimeters.

75. (New) The apparatus of claim 72, wherein the distance between the centers of adjacent dispensing tips is approximately 4.50 millimeters.

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76. (New) The apparatus of claim 72, wherein each fluid path is less than approximately 25 centimeters in length.

77. (New) The apparatus of claim 72, wherein each fluid path has a volume capacity of less than approximately 200 microliters.

78. (New) The apparatus of claim 72, wherein each dispensing device comprises corresponding electrical leads for receiving the corresponding actuation signals.

79. (New) The apparatus of claim 78, wherein the actuation signals are controlled by computer software.

80. (New) The apparatus of claim 72, wherein each dispensing device comprises a corresponding solenoid.

81. (New) The apparatus of claim 72, further comprising a motor drive system for controlling movement of an assay plate.

82. (New) The apparatus of claim 72, wherein the coefficient of variation of reagent concentration within wells of an assay plate after dispensing of reagents thereinto using the apparatus is less than approximately 2.6%.

83. (New) The apparatus of claim 72, wherein the coefficient of variation of reagent concentration within wells of an assay plate after dispensing of reagents thereinto using the apparatus is less than approximately 5.0%.

84. (New) The apparatus of claim 72, wherein the coefficient of variation of reagent concentration within wells of an assay plate after dispensing of reagents thereinto using the apparatus is less than approximately 10.0%.

85. (New) The apparatus of claim 72, wherein the fluid paths each comprise a corresponding portion supported by a common dispensing head.